



ARK LAND COMPANY

DAVID J. FINNERTY
President

January 16, 2012

VIA ELECTRONIC MAIL

Bureau of Land Management
Attn. Rough Draw, WYW-16817
1425 Fort Street
Buffalo, Wyoming 82834
Email: BLM_WY_Casper_WYMail@blm.gov

Re: Comments to BLM Scoping of the Patriot Energy Resources Proposal for Rough Draw Project WYW-168317

Dear Sirs:

Ark Land Company ("Ark Land") respectfully submits the following comments relative to Patriot Energy Resources' ("Patriot") proposal for the Rough Draw Project, WYW-168317 ("Proposal"). These comments are made in response to the Bureau of Land Management's ("BLM") December 6, 2011 notice announcing scoping of the Proposal in anticipation of the BLM's preparation of an Environmental Assessment ("EA") relating to the Proposal, and to the BLM's December 20, 2011 notice extending the scoping period through January 17, 2012.

Ark Land is a wholly-owned, direct subsidiary of Arch Coal, Inc. Ark Land and its affiliates own and operate substantial coal-producing properties in Wyoming, including the Black Thunder and Coal Creek Mines.

COMMENTS

- Environmental Impact Statement. An Environmental Impact Statement ("EIS") is likely needed to properly evaluate the impacts of the Proposal. With only limited information currently available on the potential environmental impacts of the experimental "microbial conversion" technology applied under the Proposal, it is unlikely that the announced EA will yield a Finding of No Significant Impact. Further, the EIS process will allow for broadened discussion of the issues relating to this untested technology and will provide for greater participation from interested parties.

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- Unknown Environmental Impacts. The basic science behind the proposed microbial conversion technology is to facilitate the production of hydrocarbons by causing specific chemical and biological reactions that convert coal into methane.¹ The process "biodegrades" and "consumes" the actual coal resource to produce methane gas. Testing of this technology is, however, still in the early stages. Environmental review by the BLM should include an examination of (i) the extent to which coal is consumed by the microbial conversion process, and (ii) the extent to which the process degrades adjacent coal not fully consumed by diminishing coal energy content or altering characteristics such as moisture, ash, and BTU content that are material to the value of the coal. Further, the limited testing conducted thus far has been insufficient to determine the full impact of the injections associated with the microbial conversion technology on water resources. In connection with its environmental review, the BLM should fully examine the impact of the microbial conversion process on local water quality.

- Bonding Requirements. Because the actual environmental impacts of the microbial conversion process cannot yet fully be understood, the BLM should review bonding requirements in association with any implementation of microbial conversion technologies. Bonding should be required in an amount sufficient to compensate for both damage to aquifers and damage to the coal resource that could accompany implementation of microbial conversion technologies.

- Rights to Federal Coal. As recognized by Patriot in its Proposal, more than 95% of coal within the Proposal's project area is federally owned. Although the coal seams which Patriot seeks to use under the Proposal are reportedly not currently leased for coal development, it is unclear what impact approval of the Proposal would have on the concurrent or subsequent leasing of federal coal within the project area. Because coal is necessarily consumed during the microbial conversion process, the BLM should discuss whether Patriot should be required to obtain a federal coal lease in connection with any implementation of the Proposal.

- Ownership of Produced Gas. In its *Analysis of Impacts of Methane Farming on Federal Coal in the Powder River Basin, Wyoming*, attached as Exhibit 4 to Patriot's Plan of Development ("Analysis of Impacts"), the BLM acknowledges the existence of issues relating to the separation of the coal and oil and gas mineral estates arising in the context of microbial conversion.² However, these issues have not been addressed in Patriot's Proposal. The BLM's review should address a determination of whether gas produced through the consumption of coal properly belongs to the coal or oil and gas estate. Such a determination is necessary to properly allocate royalties generated by the produced gas and to ensure that coal interest owners are properly compensated for the depletion of the coal resource.

¹ Fred J. Crocket, PG and Steven S. Wright, PE of the BLM, *Analysis of Impacts of Methane Farming on Federal Coal in the Powder River Basin Wyoming*, attached as Exhibit 4 to Patriot's Plan of Development. See also Luca Technologies – Technology, <http://www.lucatechnologies.com/technology.php> (last visited June 29, 2011); Kerry A. Dolan, *Gassy Bugs*, FORBES, Oct. 10, 2007, http://www.forbes.com/2007/10/10/kleiner-perkins-green-technology-cz_kd_1011gassybugs.html, and Dustin Bleizeffer, *Coal: It's What's for Dinner*, CASPER STAR – TRIBUNE, May 23, 2010, http://trib.com/business/business/article_90be3ff5-3399-5d89-b1b8-db893a809272.html.

² Analysis of Impacts at 7 ("... the oil and gas mineral estate may need to be separated from the coal mineral estate, and a conveyance of rights to the coal may be necessary to protect the Federal interest in methane farming situations").

- Unitization. The BLM should review how the unitization of coal and oil and gas interests proposed by Patriot is to be accomplished. Further clarification of this concept is needed to address the legal consequences to both the coal owner and gas owner of the unitized properties.

- Allowance for Developments in Mining Technology. Microbial conversion has been advocated as a means to extract energy from coal resources too deep to be economically mined. Yet coal mining technology is continually evolving and resources are being accessed today that would not have been economic 20 years ago. There is little question that mining coal will produce greater net energy than subjecting coal to microbial conversion and then extracting the resulting methane. Consequently, any assessment of the impacts and merits of conversion should minimize application of conversion to coal reasonably accessible today or plausibly accessible in the future.

- Operational Considerations. Although Patriot commits to plug and abandon all wells at least 60 days prior to intersection with an active surface coal mine, this requirement is unlikely to resolve many of the practical operational conflicts likely to arise under the proposed joint operation of enhanced methane gas production and coal mining. Even the BLM, in its Analysis of Impacts, acknowledges that "there is a very real potential for mineral development conflicts" arising from implementation of the microbial conversion process.³ The BLM's review should consider methods of resolving these conflicts prior to approval of the Proposal. The BLM should also consider imposing additional bonding requirements on gas operators employing microbial conversion technology to ensure full and timely compliance with the 60 day plug and abandon requirements. To avoid conflicts with active coal mine operations, the bond should identify the coal interest owners as beneficiaries and permit the coal interest owners to use the bond to plug and abandon of wells not timely completed by the gas operator.

Ark Land appreciates the opportunity to comment on the Proposal and reserves the right to submit further comments in response to additional proposals in the scoping process.

Sincerely,



David J. Finnerty

³ *Id.* at 8.